T0143-B Space Effect 2.0 Bi-Static RF Imager

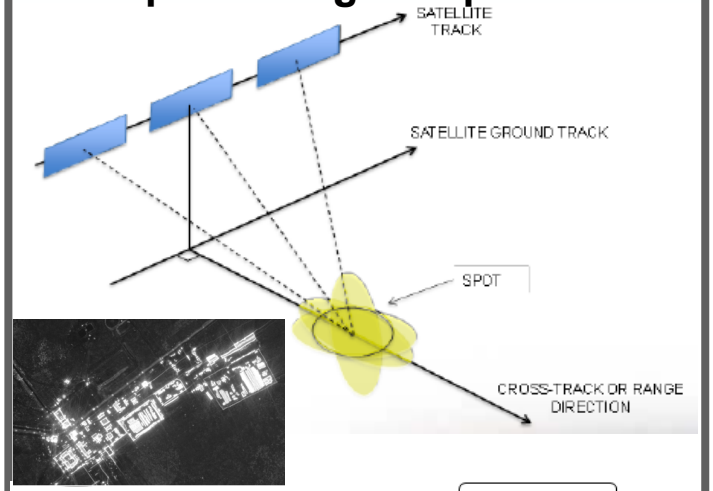
Problem Statement

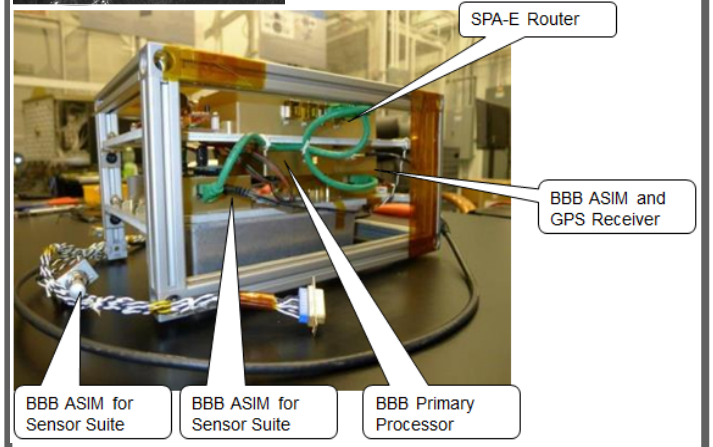
- Affordable, sustained, overhead, day/night/all-weather imaging is critical to satisfying TA10 and TA08 needs, which seek to field "**Fully capable smart, small satellites (100 g) with formation flying capability for science and inspection**."
- Primary impediments are:
  1) Incompatibility of modern budgets with large space systems;
  2) Incompatibility of small systems with RF imaging missions.
- SE 2.0 will demonstrate disaggregated RF imaging suitable for small spacecraft.
- Mission partners include, NASA, ORS, and DARPA representing the Civil/DoD/ Commercial space User communities.

Technology Development Team

- **PI**: Chuck Finley, ORS, charles.finley.1@us.af.mil
- **Funding**: ORS (Chuck Finley); DARPA (Jess Sponable)
- **Partner Orgs**: NASA ARC; ORS; DARPA; MEI

Proposed Flight Experiment





Experiment Readiness: June 2015

Test Vehicles: High-altitude balloons

Test Environment: Requesting a sustained "space-like" environment. Some components of system have flown previously in this environment, as well as on aircraft, and are baselined for spaceflight in 2016.

Technology Maturation Flight Experiment Objectives

- Open Manufacturing (OM) Responsive Space Parts (RSP)
  - ORS initiative using NASA ARC Rapid Response Spaceworks (RRSW)
  - **Relevant objective**: Demonstrate RSP effectiveness/suitability for the ORS OM space mission.
- Solar Electric Prop Experiment (SEP-X)
  - Joint DARPA/ORS/NASA GRC initiative under NASA ARC contract
  - **Relevant objective**: Demonstrate bi-static RF imaging payload performing SEP-X representative mission.
- L-3 Pressure Vessel (PV)
  - Joint DARPA/ORS BAA using NASA ARC RRSW
  - **Relevant objective**: Demonstrate PV ability to use terrestrial COTS components in space-like environment.
- Air Vehicle System (AVS)
  - DARPA initiative, managed by ORS/MEI, using NASA ARC RRSW
  - **Relevant objective**: Demonstrate balloon constellation capability to supply space "effects".

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